

The greatest thing we can do, broadly speaking, is teach Virginians the benefits of environmental stewardship...The more we preach the message of river and Bay cleanup, the more we pitch the virtues of our Blue Ridge Mountains, and the more we preserve our historic structures, then the more our citizenry will develop an inherent desire to be good stewards of our land, water and air. —Preston Bryant, Secretary of Natural Resources

Need for environmental and land stewardship education

Environmental and land stewardship education must be incorporated into planning and outreach at all levels of government. An informed citizenry with knowledge of resources and their needs for long-term sustainability are essential to good management and planning for outdoor resource and conservation lands. Local recreation programming, regional restoration efforts like Chesapeake 2000, and statewide programs like Virginia Naturally and Stewardship Virginia all work toward developing more informed communities working for improved stewardship.

The need for these programs and campaigns is evident in results from the National Environmental Education and Training Foundation's (NEETF) research

showing most Americans believe they are more aware of environmental issues than they actually may be. In the NEETF study, about 80 percent of Americans surveyed were influenced by incorrect or outdated environmental myths and only 12 percent of those surveyed passed a quiz on energy. In addition to environmental literacy for adults, the emphasis on standardized testing in public schools limits hands-on environmental education experiences to field trips. To improve environmental literacy among students and increase visitation to outdoor education facilities, hands-on experiences must be integrated into school curriculums. In Virginia, the Chesapeake 2000 requirement for a meaningful watershed experience for all students somewhat counters this trend by encouraging schools within the watershed to offer at least one hands-on experience for each student before high school graduation.



A meaningful watershed experience at York River State Park. Photo by Gail Brown.

Environmental and Land Stewardship Education

Research documents that use the *Environment as Integrating Context* (EIC) are directly correlated with improvement of academic achievement in reading, math, science and social studies (Lieberman & Hoody, 1998). EIC uses a school's surroundings and community as a framework within which students can construct their own learning, guided by teachers and administrators using proven educational practices. There is an urgency and necessity to encourage the use of outdoor facilities for environmental education in order to raise the environmental literacy among students and citizens of all ages. In order to achieve an ethic of outdoor stewardship for our natural, cultural and scenic resources as well as outdoor recreational opportunities, the level of understanding and connection to the out-of-doors must first be elevated throughout the Commonwealth.

Findings

- Environmental literacy needs to increase among citizens to begin to foster stewardship.
- A consistent stream of funding is needed to support environmental literacy efforts in our schools and communities.
- Virginia does not have a coordinated multimedia campaign to promote conservation and stewardship to all citizens.
- A personal connection with nature and the environment achieves long-term stewardship.
- There is a need to correlate outdoor environmental education facilities with Virginia's population.
- Increased support is needed for environmental education training of nonformal education program providers.
- Improved academic achievement is related to hands-on outdoor experiences and environmental education.
- Outdoor classrooms provide an appreciation for the natural environment and the way systems work together. This nurtures students to become well rounded thinkers and policy makers with an ability to make sound planning and environmental decisions.
- Nonformal outdoor education programs are not always correlated with Standards of Learning (SOLs).
- There is a need to increase Meaningful Watershed Education Experiences (MWEE) offered for K-12 students.

- A comprehensive range of educational media is required to get the conservation message to all who have yet to hear and adopt it.

Recommendations

- All the state natural resource agencies should partner with Virginia Naturally (community partners) for a multimedia campaign to improve environmental literacy using simple shared messages, clear and achievable calls to action, and measurable common goals.
- Nonformal environmental education providers should encourage use of the North American Association for Environmental Education (NAAEE) guidelines.
- The Department of Environmental Quality (DEQ) and Virginia Resource Use Education Council (VRUEC) should host an annual statewide environmental education conference for nonformal environmental educators.
- Virginia Naturally, state parks and local site managers should foster use of existing outdoor environmental education facilities.
- Create new, or upgrade existing, environmental education facilities where needs exist.
- State agencies should continue support of Stewardship Virginia, Virginia Naturally, Virginia Master Naturalist Program and the VRUEC.
- State agencies should support VRUEC efforts to promote the use, development and maintenance of nonformal facilities for environmental education. A formal inventory of statewide facilities should be conducted.
- State agencies should continue statewide efforts and work with partner states to implement the environmental education goals identified in the Chesapeake Bay Program's *2000 Chesapeake Bay Agreement*.
- Federal, state, regional and local agencies should provide citizens access to stewardship education and conservation resources.
- Federal, state, regional and local agencies should promote the value and benefits of outdoor experiences and their relationship to an environmentally literate citizenry.

Background and history

Baby boomers grew up spending more time outdoors than their children and grandchildren do today. While there are no longitudinal studies to support the claim, many older adults can cite examples of outdoor activity—walking to school, biking around town, raising farm animals, or just hanging out “in the woods” or a vacant lot. These direct experiences are personally meaningful and positive influences in their lives.

Studies are now documenting the therapeutic value of nature and benefits of a relationship to other living things such as pets and gardens. The growing body of research links our mental, physical and spiritual health directly to an association with nature and suggests that thoughtful exposure to nature can provide therapy for attention deficit disorders, depression and obesity. In his book *“Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder,”* Dr. Richard Louv has coined the term “nature-deficit disorder” to describe the severed bond between youngsters and the environment. Nature-deficit is not a medical condition but refers to costs of alienation from nature.



Simple activities like picnicking are important outdoor experiences for children. Photo by Richmond Parks, Recreation and Community Facilities.

Some of the forces that have contributed to alienation from nature include:

- The rise of air conditioning in homes and vehicles.
- The increase in electronic recreation (TV, computers, video games).
- Shrinking community open space and private yards.
- An increased perception of dangers outdoors.
- A fear of litigation and increased insurance costs.
- Increased building and environmental regulations.
- Community covenants restricting the use of open space.



Pearson's Corner Elementary School students enjoy hands on activities in the York River. Photo by Gail Brown.

It is important to have personal experiences with natural resources, especially for children. Children who understand and respect nature are better enabled as future resource managers and stewards of their environment. A child's fondness for nature results from regular outdoor experiences; however, there is decreasing exposure between children and their natural surroundings. Reasons for this lack of interaction may be that continued development creates less nature with which children have to interact, fear of encounters with strangers, liability issues and potential dangers they may encounter.

There are many recognized proponents who stress the need for children to interact with nature. One such modern proponent is author Richard Louv. In his writing, Louv points to research showing that outdoor experiences reduce stress. He also finds exposure to nature “engages a child mentally and physically in a ‘natural’ way, consistent with how humans have evolved.” A look into American environmental history shows Louv is certainly not the first to write on the need for experiences within nature, whether they are childhood or adult experiences. Noted Americans such as Henry David Thoreau, Aldo Leopold and Theodore Roosevelt have all shared a common belief in having experiences in the outdoors for children and adults alike.

As a result of technology, Americans' interaction with natural resources has changed. Historically, technology has focused on progress while paying little attention to any broad consequence on the many aspects of society (Stine, 1998). It is argued that technological historians have a responsibility to share environmental concerns with society because their insights offer special understanding (Stine, 1998). Such insight allows for greater preservation of resources and, as a result, preservation of individual experiences with resources.

Environmental and Land Stewardship Education

Over the past 50 years, technology has grown at a tremendous rate allowing greater and faster resource modification and consumption. American interaction with resources has decreased as a result of such changes. However, as shown, Americans do wish to have stake in resource decisions, first and foremost because they care (Stine, 1998).

...Now is time to be good stewards, to work together in partnership to protect Virginia's outdoors. Now is time to fulfill our obligation to our children's children.

—Gov. Tim Kaine, April 20, 2006

Land stewardship

Land stewardship is the foundation of our economic and ecological vitality. Land stewardship is the practice of carefully managing land usage so that natural systems are maintained or enhanced for future generations. In turn, this protects the goods and services we depend upon.

There is a vast body of knowledge related to ecological functions and benefits of natural systems. Understanding how ecosystems work, maintaining living resources and biological diversity, and conserving renewable and nonrenewable resources while addressing cultural values and ethics are essential to environmental literacy and land stewardship. These fundamental concepts are included in every grade level K-6, in Virginia's Standards of Learning for Science. They are further developed in Life Science, Earth Science and Biology, which are taught in the upper grades. Today, more urgently than ever before, people need to understand the connections between our resource use and quality of life, health and economic vitality. The old joke among farmers of the teacher asking the child, "Where does milk come from?" and the child answering, "Safeway," is no longer a surprise. People protect only what they value and will only value what they understand.

Changing behaviors for stewardship

Communication and education campaigns have made great strides in spreading awareness of environmental issues. A May 2004 survey conducted by the Chesapeake Bay Program indicated that nine out of 10 of the citizens surveyed reported being aware and concerned about the deterioration of the Bay's health. Almost half – 48 percent – described themselves as

"very concerned." Yet, when it came to the way many residents reported they behave – overfertilizing lawns, neglecting septic tank maintenance and leaving pet waste to flow into the Bay – nothing had changed.

So, why do these and other educated citizens fail to adopt behaviors that they know effect natural resources? It may be message fatigue. It may be a fog of apathy. It may just be inaction. Dr. Doug McKenzie-Mohr, an environmental psychologist, writes in his book *"Fostering Sustainable Behavior,"* that there is a general lack of willingness for most people to significantly alter their behavior for the sake of the environment alone. His research points out that behavior change rarely occurs as a result of simply providing information. As the Chesapeake Bay Program survey illustrated, understanding what needs to be done does not always lead to a change in behavior and better environmental practices ("Got Message?" Virginia Coastal Zone Management magazine, Spring/Summer 2006).

*In the end we will conserve only what we love.
We will love only what we understand. We will
understand only what we are taught.*

—BABA DIOUM, Senegalese conservationists, 1937

"Social marketing" is a tool for affecting change in behaviors. There is a great need for continued education to raise environmental literacy and awareness among the public. However, where we have been successful in generating awareness but not altering behavior, social marketing offers a means to affect this next step towards environmental stewardship. Alan Andreasen, author of *"Marketing Social Change,"* defines social marketing as "the application of marketing technologies developed in the commercial sector to the solution of social problems where the bottom line is behavior change."

An example of how social marketing has been implemented in Virginia is the Bay Program's Chesapeake Club Campaign. This regional partnership to affect change related to lawn care practices coined the catchy slogan *"Save the Crabs... Then Eat 'Em."* In this new twist, the campaign uses social marketing to change how residents behave, not by appealing to the environmental reasons for not fertilizing in the spring, but because of the culinary and lifestyle implications. Specifically the message suggests that the behavior of fertilizing in fall will damage a tasty regional icon, the blue crab. The campaign is unconventional. It steers away from "preachy" messages and introduces

a memorable element of humor. To read the entire "Got Message?" article and learn more about the social marketing techniques used in the Chesapeake Club Social Marketing Campaign go to: www.deq.state.va.us/coastal/documents/magss06-72.pdf and www.chesapeakeclub.org.

Learn more about social marketing for stewardship

www.deq.virginia.gov/coastal/neczmpps.htm#social
Judy Lander's presentation "Thinking Like a Marketer to Promote Environmental Changes" and a social marketing plan starter.

www.cbsm.com
Illustrates how to use community-based social marketing to design and evaluate programs, including a database of articles, reports, graphics and case studies.

www.social-marketing.org
Social Marketing Institute – Institute headed by Alan Andreason from Georgetown University

www.greenmediatoolshed.org
Green Media Toolshed – environmental social marketing tips, tools and case studies.

<http://hsc.usf.edu/medicine/ntcsm/TLM>
Online mini-course in social marketing.

Outdoor environmental education facilities

Outdoor recreation and environmental education facilities promote environmental literacy. The Governor's Advisory Commission on Environmental Education received more than 500 suggestions about ways to improve environmental education. Many of the suggestions include using outdoor experiences in teaching.

An informal assessment of outdoor environmental education facilities across the state was conducted in 2006 by soliciting input from informal environmental educators. See map VII-8 for more information.

Need for outdoor education facilities

The 2006 *Virginia Outdoors Survey* indicated that 92 percent of those surveyed responded that access to outdoor recreation is important. In addition, the survey indicated that 85 percent of those visiting state parks thought it was important to have nature and education

programs. Visiting natural areas ranked fifth on the list of activities enjoyed by citizens. When this statistic is correlated with the interest in educational opportunities desired at state parks, it is assumed there is also a similar interest in environmental education and naturalist interpretation at regional parks and natural areas.

A state parks survey requesting information about facilities for outdoor environmental education and interpretation was completed by 24 of the 34 state parks. All of the state parks responding showed that the parks engaged interested visitors in interpretive education. Central meeting rooms for large groups were needed most to expand environmental education venues and interpretation in the state parks.

Nonformal environmental educators

Outdoor recreation and environmental education facilities are most often supported by nonformal environmental educators. A nonformal educator is a professional who may not be trained as a classroom



State park programs provide outdoor environmental education.
Photo by Gail Brown.

8.5" x 11"
B&W Map to come

teacher, but has an expertise and knowledge of natural and cultural resources. Nonformal educators most often have specific training in hands-on learning and interpretation of the natural environment. Typically, these professionals are employed as naturalists, interpreters and environmental educators.

There are two types of environmental education delivery programs most often employed by nonformal environmental educators. The informal program designed to attract visitors may be thought of as an interpretive program. These programs focus on the teaching in an informal setting and are intergenerational, engaging adults, families and children. In formal programs, these same nonformal environmental educators work diligently to incorporate the Virginia Standards of Learning into programs for schools and youth classes. While the information conveyed in the formal and informal settings may be similar or the same, the audience of the classroom setting provides a captive audience and the informal setting allows participants to freedom to move in and out of the interpretive program. Both methods of education that take place are equally important. Interpreters in their informal delivery of information reach adults and others who may not otherwise have an opportunity to connect with a school group. Classroom programs reach children who may not otherwise have an opportunity to experience the out-of-doors.

North American Association of Environmental Education (NAEE) Guidelines

The National Project for Excellence in Environmental Education, initiated by NAAEE in 1993, has developed a series of guidelines that set the standards for environmental education. It is the recommendation of this plan that nonformal environmental educators should follow NAAEE guidelines in providing instruction. Through this project, NAAEE is taking the lead in establishing guidelines for the development of balanced, scientifically accurate and comprehensive environmental education programs. Quality environmental education programs facilitate the development of an environmentally literate citizenry that can compete in our global economy; has the skills, knowledge and inclinations to make well-informed choices; and exercises the rights and responsibilities of members of a community. The latest versions of printed materials in the *Guidelines for Excellence* series are posted on the NAAEE website at www.naaee.org.

The NAAEE Guidelines for Excellence has completed interrelated efforts including the following.

1. "*Environmental Education Materials: Guidelines for Excellence*," a set of recommendations for developing and selecting environmental education materials. A companion publication, "*Environmental Education Materials: Guidelines for Excellence - The Workbook*," leads educators, step by step, through the process of using the "*Environmental Education Materials: Guidelines for Excellence*."
2. A series of educator resource guides to quality environmental education materials: "*Environmental Education Collection - A Review of Resources for Educators: Volumes 1, 2 and 3*" and "*The Biodiversity Collection*" produced by the World Wildlife Fund.
3. Environmental education learner guidelines: "*Excellence in EE - Guidelines for Learning (Pre K-12)*," and its companion piece "*Guidelines for Learning (Pre K-12) - Executive Summary & Self Assessment Tool*," developed to support state and local environmental education efforts by setting expectations for performance and achievement in grades 4, 8 and 12.
4. "*Guidelines for the Preparation and Professional Development of Environmental Educators*," a set of recommendations for the preparation and continuing education of teachers and other environmental educators.
5. "*Nonformal Environmental Education Programs: Guidelines for Excellence*," a set of recommendations for the design and implementation of comprehensive nonformal environmental education programs.

Source: www.naaee.org



Black-eyed Susan. Photo by Irvine Wilson.

Environmental and Land Stewardship Education

Virginia Master Naturalist Program

www.virginiamasternaturalist.org

The Virginia Master Naturalist Program is a statewide volunteer training program that is designed to positively impact natural resource education and conservation across Virginia. The program's mission is to develop a corps of well-informed volunteers to provide education, outreach and service dedicated to the beneficial management of natural resources within their communities.

The Virginia Master Naturalist program is sponsored jointly by the Virginia Department of Conservation and Recreation (DCR), Virginia Cooperative Extension, the Virginia Department of Game and Inland Fisheries, the Virginia Department of Forestry and the Virginia Museum of Natural History. At the local level, partnerships that include other public agencies, as well as private organizations involved in conservation and education, are a cornerstone of the program.

The program consists of a network of local Virginia Master Naturalist chapters. Each chapter is responsible for recruiting and training volunteers and for working with partners to create and coordinate service opportunities. To become a certified Master Naturalist, an individual must complete a minimum of 40 hours classroom and field training and 40 hours of service.

The training consists of covering curriculum objectives that focus on ecology, natural resource management, basic natural history of the animals and plants of Virginia, and skills for teaching and field research. The service component can be in the form of education (such as leading an interpretive program in a state park), citizen science (such as collecting data on wildlife populations), or stewardship (such as restoring a natural area).

This program benefits Virginia's citizenry, its public lands and its natural resources. The development of a dedicated volunteer corps will expand the capacity of Virginia's natural resource agencies. The cooperative nature of the program provides a mechanism for state, local, nonprofit and other partners to work together towards the common goals of conservation and education. The volunteer service provides a purposeful way for citizens to spend time outdoors while improving Virginia's lands.

Stewardship Virginia

www.dcr.virginia.gov/stewardship

Stewardship Virginia is a statewide campaign that encourages and recognizes volunteer activities that have a tangible impact on Virginia's natural resources. The plan was initiated in 2002. DCR coordinates the



Volunteers work on trails in Colonial Heights. Photo by Wayne Walton.

campaign with activities in the spring and fall of each year with help from other state natural and historical resources agencies. Citizens and groups organizing a stewardship event may be assisted by the state's natural resource agencies, and all participants receive certificates of appreciation signed by the governor.

Each seasonal campaign registers between 150 and 250 community-driven stewardship projects with Stewardship Virginia. Funding and partnerships for these projects include corporate donations, involvement of local governments, and colleges and universities with community action organizations. Projects vary, but may include waterway adoption, trail improvement, planting of riparian buffers, invasive species control, habitat improvement and landscaping for conservation.

Stewardship Virginia bolsters efforts of Virginians that are engaged in conservation and encourages more people to become involved. Through community action, the campaign involves volunteers in the out-of-doors and provides opportunities for creating a long-lasting connection with Virginia's natural resources. Stewardship Virginia also encourages citizens of the Commonwealth to connect with land and water to better understand their value.

Virginia Naturally

www.vanaturally.com

Virginia Naturally is Virginia's gateway to environmental information and resources. Virginia Naturally provides citizens with "one-stop" shopping to programs and information to learn about Virginia's environment. The network of 600 organizations provides environmental education programs and services in Virginia, including volunteer and funding opportunities, teacher workshops and lesson plans, conferences, and community events. Adopted in 2000 as the official environmental education initiative of the Commonwealth, Virginia Naturally also recognizes schools and communities that are making extraordinary efforts to help citizens of all ages understand our world and lessen the negative impact on Virginia's natural and historic resources.

Public and private organizations and agencies are the heart of this initiative to link people to Virginia's natural and historic resources. Organizations who are interested in education can become a partner and participate in the statewide network to build knowledge and skills and an appreciation for life-long learning and personal responsibility to conservation. Partners advertise their programs and events on the website and share their



*Chesapeake Bay Gateways serve as an outdoor classroom.
Photo by NPS.*

success stories. They also receive free materials, a monthly newsletter, educational kits and participate in professional development.

Virginia Resource Use Education Council (VRUEC)

www.vanaturally.com/vruec.html

The Virginia Resource Use Education Council (VRUEC) membership includes representatives of natural resource agency educators at the state and federal level, Virginia Department of Education staff, and university professors involved in teacher education. The council's charter is to promote better understanding and conservation of Virginia's natural resources through education.

In 2000, Gov. Gilmore and the Virginia General Assembly appointed VRUEC members as support staff for the Virginia Naturally program and established a committee to coordinate the educational goal of the Chesapeake 2000 Agreement. As a result, the VRUEC hosts two Chesapeake Bay Academies for teachers each summer, issues the Virginia Naturally Classroom Grants, co-hosts the annual Environmental Education conference and coordinates other efforts to further natural resource education in Virginia.

2000 Chesapeake Bay Agreement

www.chesapeakebay.net/agreement.htm

The Chesapeake Bay Program's Communications and Education Subcommittee (CESC) works to increase awareness for higher public recognition of the Bay Program and its accomplishments. Goals of the subcommittee include building public understanding and support of the Chesapeake Bay ecosystem, as well as promoting restoration efforts and coordinating public information, education and participation commitments pursuant to the Bay agreement.

In addition, the work of this subcommittee builds and promotes a conservation ethic among residents of the Bay watershed through comprehensive communications efforts including media outreach, education and community engagement. A part of this work focuses on citizen involvement in Bay-related special events including restoration projects and K-12 educational initiatives.

The Chesapeake 2000 Agreement articulates stewardship and community engagement as an area of focus. The work promoted as part of this partnership agreement promotes individual stewardship and assists individuals, community-based organizations, businesses, local governments and schools. The agreement states that every school student in the watershed should have a meaningful Bay or stream outdoor experience before graduation from high school. This goal relates directly to the availability of outdoor educational facilities and programming to address the needs for stewardship, education and community engagement.

NOAA Chesapeake Bay Office

<http://noaa.chesapeakebay.net>

The NOAA Chesapeake Bay Office works to help protect and restore the Chesapeake Bay through its

programs in fisheries management, habitat restoration, coastal observations and education, and represents NOAA in the Chesapeake Bay Program.

Virginia Natural Resource Leadership Institute (VNRLI)

www.virginia.edu/ien/vnrli

The VNRLI mission is to develop leaders in the Commonwealth who can help groups involved in contentious natural resources issues move beyond conflict toward consensus building and collaborative problem solving. The VNRLI vision is that Virginia's communities will engage in productive dialogue and collaborative problem solving of natural resource issues important to community sustainability and, thus, be able to effectively manage, conserve and protect Virginia's natural resources.

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